Teacher's Scoring Guide

Grade 8
Mathematics

Fall 2008

Indiana Statewide Testing for Educational Progress

20947-W

INTRODUCTION

During the fall of 2008, Indiana students in Grades 3 through 8 and Grade 10 participated in the administration of *ISTEP+*. The test for *ISTEP+* Fall 2008 consisted of a multiple-choice section and an applied skills section. For the fall testing, the multiple-choice section was machine-scored. The applied skills section, which consisted of open-ended questions, was hand-scored.

Test results for both the multiple-choice and applied skills sections as well as images of the applied skills student responses will be available online in late November 2008. *ISTEP+* Student Labels and Student Reports will be sent to the schools in early December 2008. It is the expectation of the Indiana Department of Education that schools will take this opportunity to invite students and parents to sit down with teachers to discuss the results. To support this endeavor, the Indiana Department of Education has prepared the following *Teacher's Scoring Guide*. The purpose of this guide is to help teachers to:

- understand the methods used to score the *ISTEP+* Fall 2008 applied skills section, and
- discuss and interpret these results with students and parents.

In order to use this guide effectively, you will also need the Student Report and a copy of the student's applied skills responses.

There are two scoring guides for Grade 8, English/Language Arts and Mathematics. In this Mathematics guide, you will find:

- an introduction,
- a list of the Mathematics Grade 7 Indiana Academic Standards,*
- rubrics (scoring rules) used to score the open-ended questions,
- anchor papers that are actual examples of student work (transcribed in this guide for clarity and ease of reading), and
- descriptions of the ways in which the response meets the rubric criteria for each of the score points.

When you review the contents of the scoring guide, keep in mind that this guide is an overview. If you have questions, write via e-mail (istep@doe.in.gov) or call the Indiana Department of Education at (317) 232-9050.

* Because *ISTEP+* is administered early in the fall, the Grade 8 test is based on the academic standards through Grade 7.

INTRODUCTION TO THE MATHEMATICS APPLIED SKILLS SECTION

The applied skills section that students responded to this past fall in Grade 8 allowed the students to demonstrate their understanding of Mathematics in a variety of ways, such as applying formulas, explaining a solution, transforming a figure, or interpreting a table or graph.

STRUCTURE

The applied skills section for Grade 8 Mathematics was divided into two tests, Test 7 and Test 8. Each test consisted of seven open-ended questions. Students were permitted to use calculators on Test 8 but **not** on Test 7.

SCORING

Each open-ended question was scored according to its own rubric. A rubric is a description of student performance that clearly articulates the requirements for each of the score points. Scoring rubrics are essential because they ensure that all papers are scored objectively. Each rubric for this administration of the *ISTEP+* Grade 8 Mathematics assessment has a maximum possible score of two or three score points.

NOTE: Images of the questions and student work have been reduced to fit the format of this guide. As a result, figures and diagrams in measurement questions will appear smaller in this guide than in the actual test book.

Rubrics are established prior to testing to describe the performance criteria for each score point. The performance criteria determine the number of score points possible for each question. This process ensures that all responses are judged objectively.

1. Students should not be penalized for omitting:

   - degree symbols
   - dollar signs ($) or cent signs (¢)
   - zeros for place holders; for example, either 0.75 or .750 could be used
   - labels for word problems; for example, *miles*

     NOTE: Students WILL be penalized for use of incorrect labels.

2. Students should not be penalized for:

   - spelling or grammar errors
   - using abbreviations; for example, *ft* or *feet* would be acceptable

3. Students should be given credit for:

   - entries in the workspace that indicate understanding of a complete process even if the response on the answer line is incorrect (i.e., the student would receive partial credit for questions with rubrics that allow for scoring the work)
   - answers not written on the answer line; for example, an answer could be given in the workspace or in the explanation (however, in some cases, because of the multiple calculations in the workspace, placement of an answer on the answer line is necessary to determine which response the student intended). Students WILL be penalized for incorrect answers written on the answer line even if the correct answer appears in the workspace.
   - line graphs only if lines connect the points

CONDITION CODES

If a response is unscorable, it is assigned one of the following condition codes:

A Blank/No response/Refusal
B Illegible
C Written predominantly in a language other than English
D Insufficient response/Copied from text

MATHEMATICS GRADE 7
INDIANA ACADEMIC STANDARDS

- ❑ **Number Sense**
  Students understand and use scientific notation and square roots. They convert between fractions and decimals.

- ❑ **Computation**
  Students solve problems involving integers, fractions, decimals, ratios, and percentages.

- ❑ **Algebra and Functions**
  Students express quantitative relationships using algebraic terminology, expressions, equations, inequalities, and graphs.

- ❑ **Geometry**
  Students deepen their understanding of plane and solid geometric shapes by constructing shapes that meet given conditions and by identifying attributes of shapes.

- ❑ **Measurement**
  Students compare units of measure and use similarity to solve problems. They compute the perimeter, area, and volume of common geometric objects and use the results to find measures of less regular objects.

- ❑ **Data Analysis and Probability**
  Students collect, organize, and represent data sets and identify relationships among variables within a data set. They determine probabilities and use them to make predictions about events.

- ❑ **Problem Solving**
  Students make decisions about how to approach problems and communicate their ideas. Students use strategies, skills, and concepts in finding and communicating solutions to problems. Students determine when a solution is complete and reasonable and move beyond a particular problem by generalizing to other situations.

Problem Solving is identified as a Process Skill in the Indiana Academic Standards. To ensure that the *ISTEP+* questions that assess this Process Skill are grade-appropriate and that the questions use skills that are contained in the standards, these questions are developed by including at least two different indicators from Content Skills in addition to the indicator from the Process Skill. Some of the Content Standards included in the Content Skills are Computation, Geometry, and Algebra. The additional indicators may be from the same or different Content Skills.

The Content Skills used for each of the Process Skill questions in the Grade 8 applied skills section are shown in the following chart.

PROCESS SKILL QUESTIONS

Question	Process Skill	Content Skills *Item may map to more than one indicator in a standard.*
Test 7		
2	Problem Solving	Computation, Measurement
5	Problem Solving	Computation, Measurement
Test 8		
3	Problem Solving	Computation, Algebra and Functions
5	Problem Solving	Computation, Algebra and Functions

Test 7—Question 1: Algebra and Functions

1 Simplify: $3(6x - 4) + 2(3x - 3)$

Show All Work

Answer _____

Exemplary Response:

- $24x - 18$

AND

Sample Process:

- $3(6x - 4) + 2(3x - 3)$
  $= 18x - 12 + 6x - 6$
  $= 24x - 18$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct answer only OR Correct process; error in computation
0 points	Other

SCORE POINT 2

1 Simplify: $3(6x - 4) + 2(3x - 3)$

Show All Work

3(6x - 4) + 2(3x - 3)
18x - 12 + 6x - 6
18x + 6x = 24x 24x - 18
-12 + (-6) = -18

Answer 24x - 18

Test 7—Question 1 Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct process and gives the correct answer of $24x - 18$. The response receives a Score Point 2.

SCORE POINT 1

1 Simplify: $3(6x - 4) + 2(3x - 3)$

Show All Work

3(6x - 4) + 2(3x - 3)
18x - 12 + 6x - 6
18x + 6x - 12 - 6
24x - 6

Answer 24x - 6

Test 7—Question 1 Score Point 1

This response shows a correct process. However, the student makes an error in computation when subtracting 6 from $^{-}12$, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

SCORE POINT 0

1 Simplify: $3(6x - 4) + 2(3x - 3)$

Show All Work

3(6x - 4) + 2(3x - 3) x =3
18 - 4 9 - 3
3 • 14 1 2 • 6
42 28 12 42 + 12 = 26
+ 14
42

Answer 26

Test 7—Question 1 Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

Test 7—Question 2: Problem Solving

2 Yellow ribbon is on sale for 20% off the original price of $1.85 per yard, before tax. Kaylie bought 72 INCHES of yellow ribbon.

How much did Kaylie pay for the ribbon, before tax?

Show All Work

Answer $ _____

Exemplary Response:

- $2.96

AND

- Correct process

Sample Process:

- $\$1.85 \times 0.20 = \$0.37$

$\$1.85 - \$0.37 = \$1.48$

$1 \text{ yard} = 36 \text{ inches}$

$72 \div 36 = 2 \text{ yards}$

$2 \times \$1.48 = \$2.96$

OR

- Other valid process

Rubric:

3 points	Exemplary response
2 points	Correct answer only OR Correct process; error in computation
1 point	Correct process for determining price per yard after discount OR Correct process for determining price per inch before discount OR Correct process for determining total cost before discount
0 points	Other

SCORE POINT 3

2 Yellow ribbon is on sale for 20% off the original price of $1.85 per yard, before tax. Kaylie bought 72 INCHES of yellow ribbon.

How much did Kaylie pay for the ribbon, before tax?

Show All Work

$36\overline{)72}$ = 2yds

36in = 1yd

$1.85 × .20 = .3700

$1.85 − .37 = $1.48

$1.48 × 2 = $2.96

Answer $ 2.96

Test 7—Question 2 Score Point 3

This response matches the exemplary response contained in the rubric. The student shows a correct process and gives the correct answer of $2.96. The response receives a Score Point 3.

SCORE POINT 2

2 Yellow ribbon is on sale for 20% off the original price of $1.85 per yard, before tax. Kaylie bought 72 INCHES of yellow ribbon.

How much did Kaylie pay for the ribbon, before tax?

Show All Work

3.70 × .20 = .7400

36 × 2 = 72 = 2yds

3.70 − .74 = 2.16

1.85 × 2 = 3.70

Answer $ 2.16

Test 7—Question 2 Score Point 2

This response shows a correct process. However, the student makes an error in computation when subtracting 0.74 from 3.70, which results in an incorrect answer. Therefore, this response receives a Score Point 2.

Test 7—Question 2
Score Point 1

This response shows only a correct process for determining the price per yard after the discount. Therefore, this response receives a Score Point 1.

SCORE POINT 1

2

Yellow ribbon is on sale for 20% off the original price of $1.85 per yard, before tax. Kaylie bought 72 INCHES of yellow ribbon.

How much did Kaylie pay for the ribbon, before tax?

Show All Work

$$\begin{array}{r} {\scriptstyle 7\ 1}\\ 1.\not{8}5\\ -\ .37\\ \hline 1.48 \end{array} \qquad \begin{array}{r} {\scriptstyle 1\ 1}\\ 1.85\\ \cdot\ \ .2\\ \hline .370 \end{array}$$

Answer $ 1.48

Test 7—Question 2
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

2

Yellow ribbon is on sale for 20% off the original price of $1.85 per yard, before tax. Kaylie bought 72 INCHES of yellow ribbon.

How much did Kaylie pay for the ribbon, before tax?

Show All Work

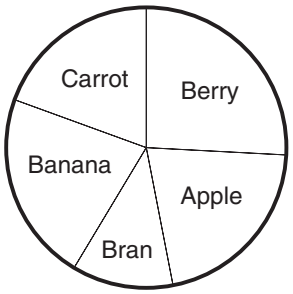
$$\begin{array}{r} 1.85\\ +\ 72\\ \hline 2.57 \end{array}$$

Answer $ 7.68

Test 7—Question 3: Data Analysis and Probability

3 This week, the bakery sold a total of 1,012 muffins.

Bakery Muffins Sold



On the lines below, explain how to estimate the total number of berry muffins sold this week. Be sure to include your estimate in your answer.

_____

_____

_____

_____

Exemplary Response:

- I estimated that about $\frac{1}{4}$ of the muffins sold were berry muffins, and that about 1,000 muffins were sold.

  $\frac{1}{4}$ of 1,000 = 250 berry muffins

OR

- Other valid explanation

Rubric:

2 points	Exemplary response
1 point	Correct explanation with no estimate given OR Correct estimate only OR Correct explanation with computation error
0 points	Other

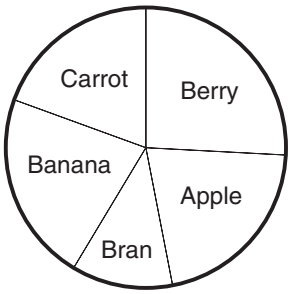
Test 7—Question 3
Score Point 2

This response matches the exemplary response contained in the rubric. The student gives a correct estimate of 250 muffins within a valid explanation. The response receives a Score Point 2.

SCORE POINT 2

3 This week, the bakery sold a total of 1,012 muffins.

Bakery Muffins Sold



On the lines below, explain how to estimate the total number of berry muffins sold this week. Be sure to include your estimate in your answer.

Berry muffins percentage is a little over 25% so take 25% of 1,000 and you get an estamite of 250 muffins.

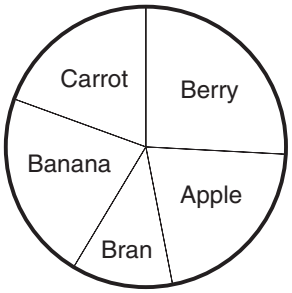
Test 7—Question 3
Score Point 1

This response shows a valid explanation. However, the student does not give an estimate for the muffins. Therefore, this response receives a Score Point 1.

SCORE POINT 1

3 This week, the bakery sold a total of 1,012 muffins.

Bakery Muffins Sold



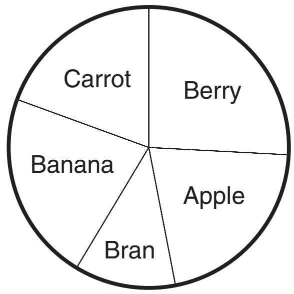
On the lines below, explain how to estimate the total number of berry muffins sold this week. Be sure to include your estimate in your answer.

Divide 1,012 by 4 because berry looks like is about 1/4 of the chart.

SCORE POINT 0

3 This week, the bakery sold a total of 1,012 muffins.

Bakery Muffins Sold



On the lines below, explain how to estimate the total number of berry muffins sold this week. Be sure to include your estimate in your answer.

You take 1,012 divided by the number of options, which is 202 muffins.

```
      202.4
5 ) 10120
   - 10↓
     01
      0
     12
   - 10
     20
```

Test 7—Question 3 Score Point 0

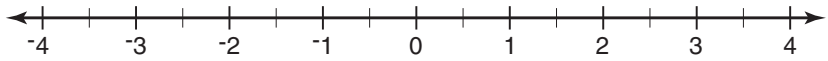
This response shows an incorrect estimate of muffins and an invalid explanation. Therefore, this response receives a Score Point 0.

Test 7—Question 4: Number Sense

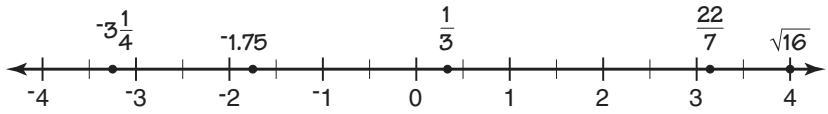
4 Look at the numbers below.

$\frac{22}{7}$ -1.75 $\frac{1}{3}$ $-3\frac{1}{4}$ $\sqrt{16}$

Plot each of these numbers on the number line below. Write the number above each point plotted.



Exemplary Response:

- 

Rubric:

2 points Exemplary response

1 point Three or four points plotted and labeled correctly
OR
All points plotted correctly but not labeled correctly

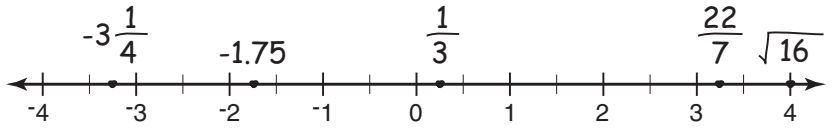
0 points Other

SCORE POINT 2

4 Look at the numbers below.

$\frac{22}{7}$ -1.75 $\frac{1}{3}$ $-3\frac{1}{4}$ $\sqrt{16}$

Plot each of these numbers on the number line below. Write the number above each point plotted.



$$3\overline{)10} = .33 \quad (-9,\ 10)$$

$$7\overline{)22} = 3.14 \quad (-21,\ 10,\ -7,\ 30,\ -28,\ 20)$$

Test 7—Question 4
Score Point 2

This response matches the exemplary response contained in the rubric. The student plotted and labeled all five points correctly. The response receives a Score Point 2.

Test 7—Question 4
Score Point 1

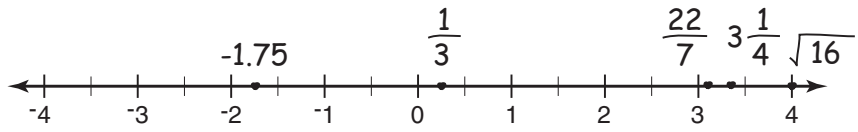
This response shows only four points plotted and labeled correctly. Therefore, this response receives a Score Point 1.

SCORE POINT 1

4 Look at the numbers below.

$\frac{22}{7}$ -1.75 $\frac{1}{3}$ $-3\frac{1}{4}$ $\sqrt{16}$

Plot each of these numbers on the number line below. Write the number above each point plotted.



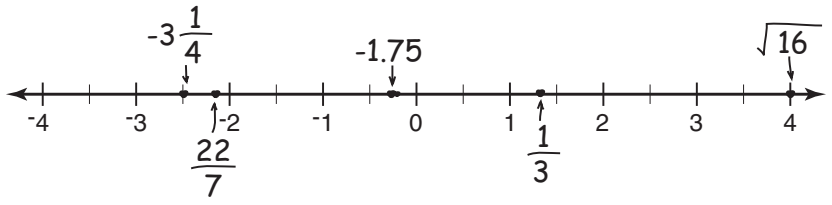
$$
\begin{array}{r}
3.14 \\
7\overline{)22} \\
-\ 21 \\
\hline
10 \\
-\ 7 \\
\hline
30 \\
-\ 2
\end{array}
$$

SCORE POINT 0

4 Look at the numbers below.

$\frac{22}{7}$ -1.75 $\frac{1}{3}$ $-3\frac{1}{4}$ $\sqrt{16}$

Plot each of these numbers on the number line below. Write the number above each point plotted.



Test 7—Question 4
Score Point 0

This response shows only one point plotted and labeled correctly. Therefore, this response receives a Score Point 0.

Test 7—Question 5: Problem Solving

5 Lake Michigan has a maximum depth of 925 feet. Lake Superior has a maximum depth that is 44% deeper than that of Lake Michigan.

What is the maximum depth, in YARDS, of Lake Superior?

Show All Work

Answer _____ yards

Exemplary Response:

- 444 yards

AND

- Correct process

Sample Process:

- $925 \times 0.44 = 407$

  $925 + 407 = 1{,}332$

  1 yard $=$ 3 feet

  $1{,}332 \div 3$ feet $=$ 444 yards

OR

- Other valid process

Rubric:

3 points	Exemplary response
2 points	Correct answer only OR Correct process; error in computation
1 point	Correct process for determining the depth of Lake Superior in feet OR Correct process for converting the maximum depth of Lake Michigan to yards and finding 44% of that depth
0 points	Other

SCORE POINT 3

5 Lake Michigan has a maximum depth of 925 feet. Lake Superior has a maximum depth that is 44% deeper than that of Lake Michigan.

What is the maximum depth, in YARDS, of Lake Superior?

Show All Work

```
  1 2              1
  925             925      LS = 1,332 ft  1,332
 × .44          + 407                      444
 13700           1332                  3 | 1332
+ 37000                                  - 12↓
 407.00                                    13
                                         - 12↓
                                           12
```

Answer 444 yards

Test 7—Question 5 Score Point 3

This response matches the exemplary response contained in the rubric. The student shows a correct process and gives the correct answer of 444 yards. The response receives a Score Point 3.

SCORE POINT 2

5 Lake Michigan has a maximum depth of 925 feet. Lake Superior has a maximum depth that is 44% deeper than that of Lake Michigan.

What is the maximum depth, in YARDS, of Lake Superior?

Show All Work

```
  11 22            1          344
  925             925     3 | 1032
 × .44          + 407        - 9
 1 3700          1,032         13
+ 37000                      - 12
 407.00                        12
```

Answer 344 yards

Test 7—Question 5 Score Point 2

This response shows a correct process. However, the student makes an error in computation when adding 925 and 407, which results in an incorrect answer. Therefore, this response receives a Score Point 2.

Test 7—Question 5
Score Point 1

This response shows only a correct process for determining the depth of Lake Superior in feet. Therefore, this response receives a Score Point 1.

SCORE POINT 1

5 Lake Michigan has a maximum depth of 925 feet. Lake Superior has a maximum depth that is 44% deeper than that of Lake Michigan.

What is the maximum depth, in YARDS, of Lake Superior?

Show All Work

925 × .44 = 407

925
+ 407
1332

Answer 1332 yards

Test 7—Question 5
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

5 Lake Michigan has a maximum depth of 925 feet. Lake Superior has a maximum depth that is 44% deeper than that of Lake Michigan.

What is the maximum depth, in YARDS, of Lake Superior?

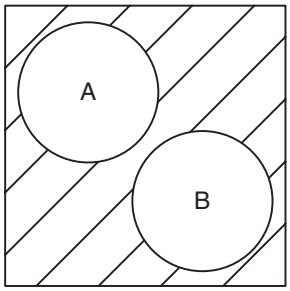
Show All Work

2
1 2
925
.44
33.00
330.00
363.00

Answer 363 yards

Test 7—Question 6: Geometry

6 Look at the diagram below.



The area of the large square is 100 square units. The area of circle A is 20 square units. Circle B is the image of circle A after a translation.

What is the area, in square units, of the striped portion of the square?

Answer _____ square units

On the lines below, explain how you determined the area of the striped portion of the square.

_____

_____

_____

_____

Exemplary Response:

- 60 square units

AND

- Circle B is a translation of circle A. Therefore, they have the same area. Add the two circle areas together and subtract that sum from the total area of the square.

OR

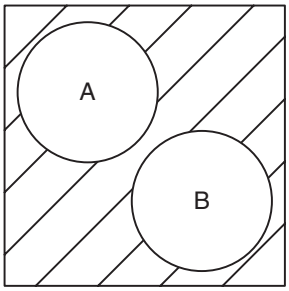
- Other valid explanation

Rubric:

2 points	Exemplary response
1 point	One correct component
0 points	Other

SCORE POINT 2

6 Look at the diagram below.



The area of the large square is 100 square units. The area of circle A is 20 square units. Circle B is the image of circle A after a translation.

What is the area, in square units, of the striped portion of the square?

Answer 60 square units

On the lines below, explain how you determined the area of the striped portion of the square.

I got this because translating a shape doesn't change it's area, so I just added 20 and 20 to get forty, and then subtracted this from 100.

Test 7—Question 6
Score Point 2

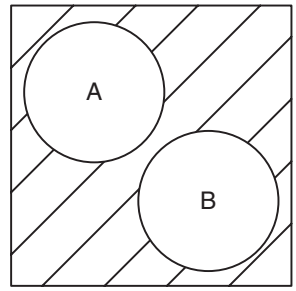
This response matches the exemplary response contained in the rubric. The student gives the correct answer of 60 square units and a valid explanation of how the answer was determined. The response receives a Score Point 2.

Test 7—Question 6
Score Point 1

This response shows the correct answer of 60 square units. However, the student gives an invalid explanation of how the answer was determined. Therefore, this response receives a Score Point 1.

SCORE POINT 1

6 Look at the diagram below.



The area of the large square is 100 square units. The area of circle A is 20 square units. Circle B is the image of circle A after a translation.

What is the area, in square units, of the striped portion of the square?

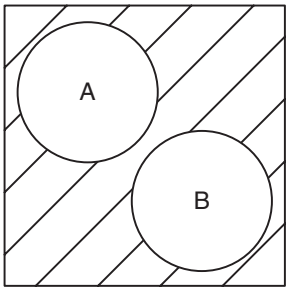
Answer 60 square units

On the lines below, explain how you determined the area of the striped portion of the square.

I just subtracted the area of circul A + circul B from the perimeter of the square.

SCORE POINT 0

6 Look at the diagram below.



The area of the large square is 100 square units. The area of circle A is 20 square units. Circle B is the image of circle A after a translation.

What is the area, in square units, of the striped portion of the square?

Answer 80 square units

On the lines below, explain how you determined the area of the striped portion of the square.

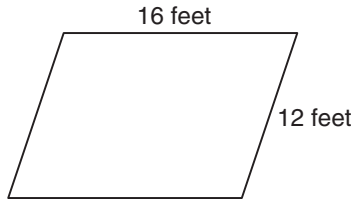
I subracted 20 from 100.

Test 7—Question 6
Score Point 0

This response shows an incorrect answer and an invalid explanation. Therefore, this response receives a Score Point 0.

Test 7—Question 7: Measurement

7 A landscape designer is making a scale drawing of a garden in the shape of a parallelogram, as shown in the diagram below.



The designer plans to make her drawing using a scale of 1 inch equals 8 feet.

What will be the length and width, in inches, of the scale drawing?

Show All Work

Length _____ inches

Width _____ inches

Exemplary Response:

- 2 inches

AND

- 1.5 inches

Sample Process:

- $16 \div 8 = 2$

  $12 \div 8 = 1.5$

OR

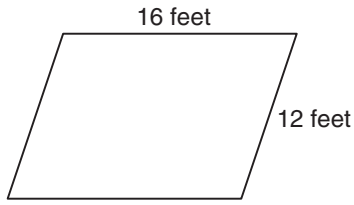
- Other valid process

Rubric:

2 points	Exemplary response
1 point	One correct component OR Correct process; error in computation
0 points	Other

SCORE POINT 2

7 A landscape designer is making a scale drawing of a garden in the shape of a parallelogram, as shown in the diagram below.



The designer plans to make her drawing using a scale of 1 inch equals 8 feet.

What will be the length and width, in inches, of the scale drawing?

Show All Work

$$8\overline{)16}\quad 2 \qquad -16 \quad 0$$

$$8\overline{)12}\quad 1.5$$

Length 2 inches

Width 1.5 inches

Test 7—Question 7
Score Point 2

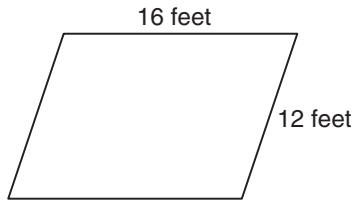
This response matches the exemplary response contained in the rubric. The student gives the correct answers of 2 inches for the length and 1.5 inches for the width. The response receives a Score Point 2.

Test 7—Question 7
Score Point 1

This response shows only the correct answer of 2 inches for the length. Therefore, this response receives a Score Point 1.

SCORE POINT 1

7 A landscape designer is making a scale drawing of a garden in the shape of a parallelogram, as shown in the diagram below.



The designer plans to make her drawing using a scale of 1 inch equals 8 feet.

What will be the length and width, in inches, of the scale drawing?

Show All Work

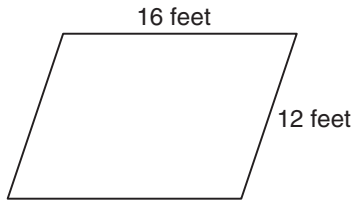
$$8\overline{)16}\ 2 \qquad 8\overline{)12}\ 1.4 \quad \text{(8, 4)}$$

Length 2 inches

Width 1.4 inches

SCORE POINT 0

7 A landscape designer is making a scale drawing of a garden in the shape of a parallelogram, as shown in the diagram below.



The designer plans to make her drawing using a scale of 1 inch equals 8 feet.

What will be the length and width, in inches, of the scale drawing?

Show All Work

16
16
12
+ 12
56

Length 56 inches

Width 56 inches

Test 7—Question 7
Score Point 0

This response shows an incorrect answer for the length, an incorrect answer for the width, and an incorrect process. Therefore, this response receives a Score Point 0.

Test 8—Question 1: Algebra and Functions

1 Sherry tutors children in computer skills for $12 per hour. After spending $21 of the money she earned on Monday, she had $27 left to put in her savings account.

On the line below, write a linear equation that can be used to determine how many hours (h) Sherry tutored on Monday.

Equation _____

Now solve the equation you wrote to determine how many hours Sherry tutored on Monday.

Answer _____ hours

Exemplary Response:

- $27 = 12h - 21$

OR

- $12h = 48$

OR

- $h = 48 \div 12$

OR

- Other valid equation

AND

- 4 hours

NOTE: If an incorrect equation is solved correctly, award one point.

Rubric:

2 points	Exemplary response
1 point	One correct component
0 points	Other

SCORE POINT 2

1 Sherry tutors children in computer skills for $12 per hour. After spending $21 of the money she earned on Monday, she had $27 left to put in her savings account.

On the line below, write a linear equation that can be used to determine how many hours (h) Sherry tutored on Monday.

Equation 12h - 21 = 27 12(h) - 21 = 27

Now solve the equation you wrote to determine how many hours Sherry tutored on Monday.

$$12h - 21 = 27$$
$$+21 \quad +21$$
$$\frac{12h}{12} = \frac{48}{12}$$
$$h = 4$$

Answer 4 hours

Test 8—Question 1 Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a valid equation and gives the correct answer of 4 hours. The response receives a Score Point 2.

SCORE POINT 1

1 Sherry tutors children in computer skills for $12 per hour. After spending $21 of the money she earned on Monday, she had $27 left to put in her savings account.

On the line below, write a linear equation that can be used to determine how many hours (h) Sherry tutored on Monday.

Equation H = 21 + 27

Now solve the equation you wrote to determine how many hours Sherry tutored on Monday.

Answer 4 hours

Test 8—Question 1 Score Point 1

This response shows the correct answer of 4 hours. However, the student does not give a valid equation. Therefore, this response receives a Score Point 1.

Test 8—Question 1
Score Point 0

This response shows an invalid equation and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

1 Sherry tutors children in computer skills for $12 per hour. After spending $21 of the money she earned on Monday, she had $27 left to put in her savings account.

On the line below, write a linear equation that can be used to determine how many hours (h) Sherry tutored on Monday.

Equation 21 + h = 27

Now solve the equation you wrote to determine how many hours Sherry tutored on Monday.

Answer 5 hours

52.00
- 21.00
31.00

39
40.00
21.00
18.00

12.00
12.00
24.00
12.00
36.00
12.00
128.00
12.00
40.00
12.00
52.00

Test 8—Question 2: Data Analysis and Probability

2 The City Orchestra has been invited to play 2 different pieces of music at the opening of the State Fair. The orchestra has 3 different pieces of music to choose from.

In how many different orders is it possible for the pieces of music to be played?

Show All Work

Answer _____ orders

Exemplary Response:

- 6

AND

Sample Process:

- AB, AC
  BA, BC
  CA, CB

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	4 or 5 correct orders OR Correct answer only OR Correct process; error in computation
0 points	Other

Test 8—Question 2
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct process and gives the correct answer of 6. The response receives a Score Point 2.

SCORE POINT 2

2 The City Orchestra has been invited to play 2 different pieces of music at the opening of the State Fair. The orchestra has 3 different pieces of music to choose from.

In how many different orders is it possible for the pieces of music to be played?

Show All Work

12
21
23
32
13
31

Answer 6 orders

Test 8—Question 2
Score Point 1

This response shows a correct process. However, the student makes an error in computation when multiplying 2 and 3, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

SCORE POINT 1

2 The City Orchestra has been invited to play 2 different pieces of music at the opening of the State Fair. The orchestra has 3 different pieces of music to choose from.

In how many different orders is it possible for the pieces of music to be played?

Show All Work

$$\begin{array}{r} 2 \\ \times\ 3 \\ \hline 5 \end{array}$$

Answer 5 orders

SCORE POINT 0

2 The City Orchestra has been invited to play 2 different pieces of music at the opening of the State Fair. The orchestra has 3 different pieces of music to choose from.

In how many different orders is it possible for the pieces of music to be played?

Show All Work

1 1 1 3
2 2 3 2
3

Answer 3 orders

Test 8—Question 2
Score Point 0

This response shows an incomplete process and an incorrect answer. Therefore, this response receives a Score Point 0.

Test 8—Question 3: Problem Solving

3 Lilly and Nina sell cars at the Top Shelf Car Depot. Last week, Lilly's sales total was $34,000. Nina's sales total was 40% more than Lilly's.

The dealership uses the formula below to determine each salesperson's commission (c) based on his or her weekly sales total (d).

$$c = 0.035d + \$55$$

How much more commission did Nina make than Lilly?

Show All Work

Answer $ _____

Exemplary Response:

- $476

AND

- Correct process

Sample Process:

- Nina's Sales Total: $34{,}000 \times 1.40 = \$47{,}600$

  Lilly: $0.035 \times 34{,}000 + 55 = \$1{,}245$

  Nina: $0.035 \times 47{,}600 + 55 = \$1{,}721$

  $\$1{,}721 - \$1{,}245 = \$476$

OR

- Other valid process

Rubric:

3 points	Exemplary response
2 points	Correct answer only OR Correct process; error in computation
1 point	Correct process for determining amount of one commission OR Correct process for determining Nina's sales total
0 points	Other

SCORE POINT 3

3 Lilly and Nina sell cars at the Top Shelf Car Depot. Last week, Lilly's sales total was $34,000. Nina's sales total was 40% more than Lilly's.

The dealership uses the formula below to determine each salesperson's commission (c) based on his or her weekly sales total (d).

$$c = 0.035d + \$55$$

How much more commission did Nina make than Lilly?

Show All Work

Lilly
C = 0.035(34000) + $55
C = 1190 + 55
C = 1245
1721 - 1245 = $476

Ninas
34000 • .4 = 13600 + 34000 = $47600

Nina
C = 0.035(47600) + $55
C = 1666 + 55
C = $1721 = Nina

Answer $ 476

Test 8—Question 3 Score Point 3

This response matches the exemplary response contained in the rubric. The student shows a correct process and gives the correct answer of $476. The response receives a Score Point 3.

SCORE POINT 2

3 Lilly and Nina sell cars at the Top Shelf Car Depot. Last week, Lilly's sales total was $34,000. Nina's sales total was 40% more than Lilly's.

The dealership uses the formula below to determine each salesperson's commission (c) based on his or her weekly sales total (d).

$$c = 0.035d + \$55$$

How much more commission did Nina make than Lilly?

Show All Work

C = 0.035(34,000) + 55 $1,245 = Lilly

34,000
× .40
13,600
+ 34,000
47,600

C = 0.035(47,000) + 55
1,700 = Nina

1,700
- 1,245
455

Answer $ 455

Test 8—Question 3 Score Point 2

This response shows a correct process. However, the student makes a transcription error writing 47,000 instead of 47,600, which results in an incorrect answer. Therefore, this response receives a Score Point 2.

Test 8—Question 3
Score Point 1

This response shows only a correct process for determining the amount of commission for Lilly. Therefore, this response receives a Score Point 1.

SCORE POINT 1

3 Lilly and Nina sell cars at the Top Shelf Car Depot. Last week, Lilly's sales total was $34,000. Nina's sales total was 40% more than Lilly's.

The dealership uses the formula below to determine each salesperson's commission (c) based on his or her weekly sales total (d).

$$c = 0.035d + \$55$$

How much more commission did Nina make than Lilly?

Show All Work

Lilly $34,000
× 0.035
1190
55
1245

Answer $ .4

Test 8—Question 3
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

3 Lilly and Nina sell cars at the Top Shelf Car Depot. Last week, Lilly's sales total was $34,000. Nina's sales total was 40% more than Lilly's.

The dealership uses the formula below to determine each salesperson's commission (c) based on his or her weekly sales total (d).

$$c = 0.035d + \$55$$

How much more commission did Nina make than Lilly?

Show All Work

34,000
× 0.035
1190

Answer $ 1190

Test 8—Question 4: Algebra and Functions

4 Solve the following equation for y.

$$4y - 16 = 8x$$

Equation $y =$ _____

Find the value of y when $x = 17$.

Show All Work

Answer $y =$ _____

Exemplary Response:

- $y = 2x + 4$

OR

- Other valid equation

AND

- 38

AND

- Correct process

Sample Process:

- $y = 2x + 4$
  $= 2(17) + 4$
  $= 34 + 4$
  $= 38$

OR

- Other valid process

NOTE: Award 1 point for a correct answer based on an incorrect equation.

Rubric:

2 points	Exemplary response
1 point	Correct answers only
	OR
	Correct equation written in terms of *y* only
	OR
	Correct process; error in computation
0 points	Other

SCORE POINT 2

4 Solve the following equation for y.

$$4y - 16 = 8x$$
$$+16 \quad +16$$

Equation $y =$ y = 2x + 4

$$\frac{4y}{4} = \frac{8x + 16}{4} = y = 2x + 4$$

Find the value of y when $x = 17$.

Show All Work

$$y = 2 \cdot 17 + 4$$
$$y = 34 + 4$$
$$y = 38$$

Answer $y =$ 38

Test 8—Question 4
Score Point 2

This response matches the exemplary response contained in the rubric. The student gives a valid equation, shows a correct process, and gives the correct answer of 38. The response receives a Score Point 2.

Test 8—Question 4
Score Point 1

This response shows a valid equation and a correct process. However, the student makes an error in computation when dividing 152 by 4, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

SCORE POINT 1

4 Solve the following equation for y.

$$4y - 16 = 8x$$

$4y - 16 = 8x$
$+16 \quad +16$
$\frac{4y = 8x + 16}{4}$
$y = \frac{8x + 16}{4}$

Equation y = $\frac{8x + 16}{4}$

Find the value of y when $x = 17$.

Show All Work

$4y - 16 = 8x$
$4y - 16 = 8(17)$
$4y - 16 = 136$
$+16 \quad +16$
$\frac{4y = 152}{4}$
$y = 35.5$

$17 \times 8 = 136$

$136 + 16 = 152$

$4\overline{)152}$ = 35.5
12
22

Answer y = $35\frac{1}{2}$

SCORE POINT 0

4 Solve the following equation for y.

$4y - 16 = 8x$

$+16 \quad +16$

$\frac{4y}{4} \quad \frac{24}{4}$

Equation $y =$ 6

$y = 6$

Find the value of y when $x = 17$.

Show All Work

$6y - 16 = 17x$

$+16 \quad +16$

$\frac{6y}{6} = \frac{33}{6} = 6\overline{)33}$ 5.3, 30, 3

Answer $y =$ 5.3

Test 8—Question 4
Score Point 0

This response shows an invalid equation, an incorrect process, and an incorrect answer. Therefore, this response receives a Score Point 0.

Test 8—Question 5: Problem Solving

5 A television station charges $1,089 for a sixty-second commercial and $325 for a fifteen-second commercial.

The television station also sells 10 minutes of commercial time for a total of $10,000.

How much will an advertiser save if they purchase the 10-minute block of commercials instead of 7 sixty-second commercials and 12 fifteen-second commercials?

Show All Work

Answer $ _____

Exemplary Response:

- $1,523

AND

- Correct process

Sample Process:

- Cost for 7 sixty-second commercials:
  $7 \times \$1{,}089 = \$7{,}623$

  Cost for 12 fifteen-second commercials:
  $12 \times \$325 = \$3{,}900$

  $\$7{,}623 + \$3{,}900 = \$11{,}523$

  $\$11{,}523 - \$10{,}000 = \$1{,}523$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct answer only
	OR
	Correct process; error in computation
	OR
	Correct process for determining the total cost for the individual commercials
0 points	Other

SCORE POINT 2

5 A television station charges $1,089 for a sixty-second commercial and $325 for a fifteen-second commercial.

The television station also sells 10 minutes of commercial time for a total of $10,000.

How much will an advertiser save if they purchase the 10-minute block of commercials instead of 7 sixty-second commercials and 12 fifteen-second commercials?

Show All Work

1,089	325	7,623	$11,523
× 7	× 12	+ 3,900	- 10,000
$7,623	$3900	$11,523	$1,523

Answer $ 1,523

Test 8—Question 5 Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct process and gives the correct answer of $1,523. The response receives a Score Point 2.

SCORE POINT 1

5 A television station charges $1,089 for a sixty-second commercial and $325 for a fifteen-second commercial.

The television station also sells 10 minutes of commercial time for a total of $10,000.

How much will an advertiser save if they purchase the 10-minute block of commercials instead of 7 sixty-second commercials and 12 fifteen-second commercials?

Show All Work

325	1,089
× 12	× 7
3900	7,623
	+ 3900
	11,523

Answer $ 11,523

Test 8—Question 5 Score Point 1

This response shows only a correct process for determining the total cost for the individual commercials. Therefore, this response receives a Score Point 1.

Test 8—Question 5
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

5 A television station charges $1,089 for a sixty-second commercial and $325 for a fifteen-second commercial.

The television station also sells 10 minutes of commercial time for a total of $10,000.

How much will an advertiser save if they purchase the 10-minute block of commercials instead of 7 sixty-second commercials and 12 fifteen-second commercials?

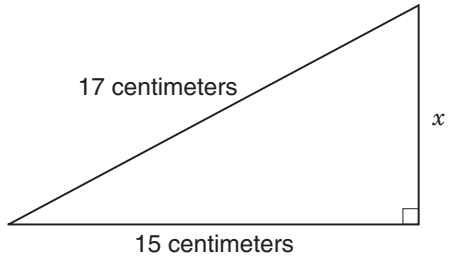
Show All Work

$$\begin{array}{r} {\scriptstyle 6\ 6} \\ 1{,}089 \\ \times\quad 7 \\ \hline 7{,}623 \end{array} \qquad \begin{array}{r} {\scriptstyle 1} \\ 325 \\ \times\quad 12 \\ \hline 650 \\ 3250 \\ \hline 3{,}900 \end{array} \qquad \begin{array}{r} {\scriptstyle 14} \\ 6\not{7},\not{0}23 \\ -\ 3{,}900 \\ \hline 3{,}723 \end{array}$$

Answer $ 3,723

Test 8—Question 6: Geometry

6 Look at the right triangle below.



What is the length, in centimeters, of side x of the triangle?

Show All Work

Answer _____ centimeters

Exemplary Response:

- 8 centimeters

AND

- Correct process

Sample Process:

- $x^2 + 15^2 = 17^2$

$x^2 + 225 = 289$

$x^2 = 64$

$x = 8$

OR

- Other valid process

Rubric:

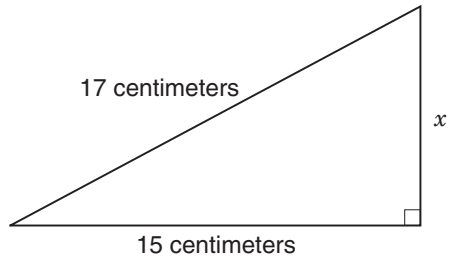
2 points	Exemplary response
1 point	Correct answer only OR Correct process; error in computation
0 points	Other

Test 8—Question 6
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct process and gives the correct answer of 8 centimeters. The response receives a Score Point 2.

SCORE POINT 2

6 Look at the right triangle below.



What is the length, in centimeters, of side x of the triangle?

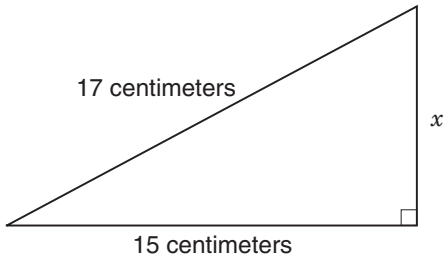
Show All Work

$x^2 + 15^2 = 17^2$
$x^2 + 225 = 289$
$-225 \quad -225$
$x^2 = 64 \quad x = 8$

Answer 8 centimeters

SCORE POINT 1

6 Look at the right triangle below.



What is the length, in centimeters, of side x of the triangle?

Show All Work

$a^2 + 15^2 = 17^2$
$a^2 + 225 = 289$
289
$- 225$

Answer 64 centimeters

Test 8—Question 6
Score Point 1

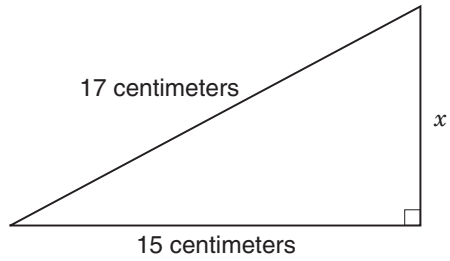
This response shows an incomplete process. The student correctly sets up the equation with values from the problem. However, the student does not find the square root of 64, which leads to an incorrect answer. Therefore, this response receives a Score Point 1.

Test 8—Question 6
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

SCORE POINT 0

6 Look at the right triangle below.



What is the length, in centimeters, of side x of the triangle?

Show All Work

$17^2 + 15^2 = 32$

Answer 32 centimeters

Test 8—Question 7: Measurement

7 A model boat has a length of 13 inches. One inch on the model boat represents 15 inches on the actual boat.

What is the length, in inches, of the actual boat?

Show All Work

Answer _____ inches

Exemplary Response:

- 195 inches

AND

- Correct process

Sample Process:

- $\frac{15}{1} = \frac{x}{13}$

  $x = 15 \times 13$

  $x = 195$

OR

- Other valid process

Rubric:

2 points	Exemplary response
1 point	Correct answer only OR Correct process; error in computation
0 points	Other

Test 8—Question 7
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct process and gives the correct answer of 195 inches. The response receives a Score Point 2.

SCORE POINT 2

7 A model boat has a length of 13 inches. One inch on the model boat represents 15 inches on the actual boat.

What is the length, in inches, of the actual boat?

Show All Work

$\frac{13}{x} = \frac{1}{15}$

$\frac{1x}{1} = \frac{195}{1}$

$x = 195$

$\overset{1}{13} \times 15 = 65 + 13 = 195$

Answer 195 inches

Test 8—Question 7
Score Point 1

This response shows a correct process. However, the student makes an error in computation when multiplying 13 and 15, which results in an incorrect answer. Therefore, this response receives a Score Point 1.

SCORE POINT 1

7 A model boat has a length of 13 inches. One inch on the model boat represents 15 inches on the actual boat.

What is the length, in inches, of the actual boat?

Show All Work

$\overset{1}{13} \times 15 = {}_{1}75 + 230 = 305$

Answer 305 inches

SCORE POINT 0

7 A model boat has a length of 13 inches. One inch on the model boat represents 15 inches on the actual boat.

What is the length, in inches, of the actual boat?

Show All Work

$$\begin{array}{r} 13 \\ +\ 15 \\ \hline 28 \end{array}$$

Answer 28 inches

Test 8—Question 7
Score Point 0

This response shows an incorrect process and an incorrect answer. Therefore, this response receives a Score Point 0.

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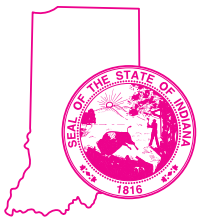

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